

We claim:

1. A multi-coil NMR probe, comprising:
  - a plurality of sample holders adapted to be positioned within an NMR magnet;
  - a plurality of sample coils respectively positioned around said sample holders; and
  - a diode switching circuit connected to said sample coils, said switching circuit including a plurality of nonmagnetic diodes located proximate said sample coils within said probe.
2. The NMR probe of claim 1, wherein said nonmagnetic diodes each comprise a diode die mounted on a ceramic substrate and wire bonded with nonmagnetic wire to a pad on said substrate.
3. The NMR probe of claim 2, wherein said pad is a gold pad.
4. The NMR probe of claim 3, wherein each diode die is wire bonded to said gold pad with aluminum or gold wire.
5. The NMR probe of claim 4, wherein each diode die is encapsulated with said gold pad and wire bonding in a nonmagnetic polymer.
6. The NMR probe of claim 1, wherein said switching circuit comprises a linear array of resonant circuits connected in parallel, and a plurality of switches each including at least one diode and means for supplying a DC switching control current to said at least one diode.
7. The NMR probe of claim 1, wherein said switching circuit comprises a diode crossbar array, said array having a plurality of row selection switches and a plurality of column selection switches.

8. A multi-coil NMR difference probe, comprising:

a pair of sample holders adapted to be positioned within an NMR magnet;

first and second sample coils positioned around said sample holders, said sample coils having directly interconnected first ends, said first sample coil having a second end connected to a receiver, said second sample coil having a second end connected to ground; and

first and second nonmagnetic crossed-diode pairs located proximate said sample coils within said probe, said first crossed-diode pair connected between a transmitter and said interconnected first ends of said sample coils, said second crossed-diode pair connected between said second ends of said sample coils.

9. The NMR probe of claim 8, wherein said nonmagnetic crossed-diode pairs each comprise diode dice mounted on a ceramic substrate and wire bonded with nonmagnetic wire to a pad on said substrate.

10. The NMR probe of claim 9, wherein said pad is a gold pad and said wire is aluminum or gold wire.